

What is claimed is:

1. An electrostatic discharge (ESD) protection device, for protecting power lines of an integrated circuit, comprising:
 - a first silicon controlled rectifier (SCR) for coupling between a first power line and a second power line;
 - a second SCR for coupling anti-parallel to said first SCR between said first and second power lines;
 - a first trigger device for coupling to said first power line and a first trigger gate of said first SCR; and
 - a second trigger device for coupling to said second power line and a first trigger gate of said second SCR.
2. The ESD protection device of claim 1, wherein:
 - said first SCR comprises a first anode for coupling to the first power line, and a first cathode for coupling to the second power line; and
 - said second SCR comprises a second anode for coupling to the second power line, and a second cathode for coupling to the first power line.
3. The ESD protection device of claim 2, further comprising at least one of:
 - a first resistor coupled to the first trigger gate of said first SCR and ground; and
 - a second resistor coupled to the first trigger gate of said second SCR and ground.
4. The ESD protection device of claim 3, wherein at least one of said first and second resistors comprises a shunt resistor coupled in parallel with an intrinsic substrate resistance.
5. The ESD protection device of claim 2, wherein each of said first and second triggering devices comprises an NMOS transistor having a source

respectively coupled to the first trigger gate of said first and second SCR, and a drain for respectively coupling to said first and second power lines.

6. The ESD protection device of claim 5, wherein each NMOS transistor comprises a gate and bulk terminal coupled to ground.
7. The ESD protection device of claim 2, wherein at least one of said first and second triggering devices each comprise at least one triggering diode, wherein said at least one triggering diode of said first triggering device is for coupling in a forward conduction direction from said first power line to the first trigger gate of said first SCR, and said at least one triggering diode of said second triggering device is for coupling in a forward conduction direction from said second power line to the first trigger gate of said second SCR.
8. The ESD protection device of claim 2, further comprising:
 - at least one first holding voltage diode for coupling in a forward conduction direction from said first power line to the first anode of said first SCR; and
 - at least one second holding voltage diode for coupling in a forward conduction direction from said second power line to the second anode of said second SCR.
9. The ESD protection device of claim 2, wherein each of said first and second SCRs further comprises a floating N-well.
10. The ESD protection device of claim 9, wherein each of said first and second SCRs further comprises a second trigger gate formed by an N⁺ region disposed in said N-well, and where said N⁺ regions are respectively coupled to the first and second anodes of said first and second SCRs.

11. The ESD protection device of claim 9, wherein each of said first and second SCRs further comprises a second trigger gate formed by an N+ region disposed in said N-well, and where said N+ regions are coupled together.
12. The ESD protection device of claim 9, wherein said floating N-wells of said first and second SCRs form a joint N-well.
13. An electrostatic discharge (ESD) protection device, for protecting power lines of an integrated circuit, comprising:
 - a first silicon controlled rectifier (SCR) for coupling between a first power line and a second power line;
 - a second SCR coupled anti-parallel to said first SCR between said first and second power lines;
 - a trigger device for coupling between said first and second power lines, said trigger device having a bulk terminal coupled to a first trigger gate of each of the first and second SCRs.
14. The ESD protection device of claim 13, further comprising at least one of:
 - a first resistor coupled to the first trigger gate of said first SCR and ground; and
 - a second resistor coupled to the first trigger gate of said second SCR and ground.
15. The ESD protection device of claim 14, wherein at least one of said first and second resistors comprises a shunt resistor coupled in parallel with an intrinsic substrate resistance.
16. The ESD protection device of claim 14, wherein said trigger device comprises an NMOS transistor, said NMOS transistor comprising:
 - a source for coupling to the second power line;
 - a drain for coupling to the first power line; and

a gate for coupling to ground.

17. The ESD protection device of claim 14, further comprising:
 - at least one first holding voltage diode for coupling in a forward conduction direction from said first power line to an anode of said first SCR; and
 - at least one second holding voltage diode for coupling in a forward conduction direction from said second power line to an anode of said second SCR.
18. The ESD protection device of claim 16, wherein each of said first and second SCRs further comprises a floating N-well.
19. The ESD protection device of claim 18, wherein each of said first and second SCRs further comprises a second trigger gate formed by an N+ region disposed in said N-well, and where said N+ regions are respectively coupled to first and second anodes of said first and second SCRs.
20. The ESD protection device of claim 18, wherein each of said first and second SCRs further comprises a second trigger gate formed by an N+ region disposed in said N-well, and where said N+ regions are coupled together.
21. The ESD protection device of claim 18, wherein said floating N-wells of said first and second SCRs form a joint N-well.
22. An electrostatic discharge (ESD) protection device, for protecting power lines of an integrated circuit, comprising:
 - a first silicon controlled rectifier (SCR) for coupling between a first power line and a second power line;
 - a second SCR coupled anti-parallel to said first SCR between said first and second power lines;

a first trigger device for coupling to said first power line and coupled to a second trigger gate of said first SCR; and

a second trigger device for coupling to said second power line and coupled to a second trigger gate of said second SCR.

23. The ESD protection device of claim 22, wherein:

said first SCR comprises a first anode for coupling to the first power line, and a first cathode for coupling to the second power line; and

said second SCR comprises a second anode for coupling to the second power line, and a second cathode for coupling to the first power line.

24. The ESD protection device of claim 23, further comprising at least one of:

a first resistor coupled to the first trigger gate of said first SCR and ground; and

a second resistor coupled to the first trigger gate of said second SCR and ground.

25. The ESD protection device of claim 24, wherein at least one of said first and second resistors comprises a shunt resistor coupled in parallel with an intrinsic substrate resistance.

26. The ESD protection device of claim 23, wherein at least one of said first and second triggering devices comprises at least one triggering diode, wherein:

said at least one triggering diode of said first triggering device is for coupling in a forward conduction direction from the second trigger gate of said first SCR to said second power line; and

said at least one triggering diode of said second triggering device is for coupling in a forward conduction direction from the second trigger gate of said second SCR to said first power line.

27. The ESD protection device of claim 23, further comprising:

at least one first holding voltage diode coupled in a forward conduction direction from said first power line to the first anode of said first SCR; and

at least one second holding voltage diode coupled in a forward conduction direction from said second power line to the second anode of said second SCR.

28. The ESD protection device of claim 23, wherein each of said first and second SCRs further comprises a P-well.

29. The ESD protection device of claim 28, wherein said P-wells further comprise a first trigger gate formed by a P+ region disposed in said P-wells of said first and second SCRs, and where said P-wells are coupled together.

30. The ESD protection device of claim 23, wherein each of said first and second SCRs further comprises a floating N-well.

31. The ESD protection device of claim 30, wherein each of said first and second SCRs further comprises a second trigger gate formed by an N+ region disposed in said N-well, and where said N+ regions are coupled together.

32. The ESD protection device of claim 30, wherein said floating N-wells of said first and second SCRs form a joint N-well.